NPIC/P&DS/D/6-1613
5 October 1966

MEMORANDUM FOR: Chief, Exploitation Systems Section, DB, P&DS
25X1 ATTENTION : [redacted]

THROUGH : Chief, Development Branch, P&DS

SUBJECT : Laser Rear Projection Viewing System

REFERENCE : NPIC/P&DS/D/6-1575, Memo Regarding Subject, dated 15 September 1966

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1. The reference memorandum discusses a proposal by [redacted] 25X1
25X1 [redacted] to study the feasibility of developing the subject viewing system. On the basis of the reference memorandum a visit to [redacted]
25X1 [redacted] was arranged for [redacted] and myself to evaluate the status 25X1
of their development in this area.

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2. On 30 September 1966 we visited [redacted] at the 25X1
25X1 [redacted] and viewed the bread-board monochromatic laser-scanning display system they are developing for [redacted] The performance of this device was both encouraging and disappointing. It was encouraging in that it demonstrated the basic feasibility of producing a real-time display with scanned laser illumination at television bandwidths. It was disappointing in that the demonstrable performance was considerably more limited than had been described. [redacted] explained 25X1
that this was due primarily to the Fiber Optic Scan Converter and the temperature sensitivity of the galvanometer type scanning component. This display performance was deficient in terms of resolution (approximately 5 lines per inch), size of display (about 8 x 10 inches), and non-uniformity of the displayed image.

3. In spite of these deficiencies, the coming feasibility of such wide bandwidth scanning light beam displays was definitely established.
25X1 [redacted] has accomplished the development of a very efficient wideband modulator and a very advanced scanning system. It appears that in a relatively short time these techniques will be developed into a performance capability which is highly competitive with the cathode ray tube. It appears even now that the system could be used for illuminating a contact-type light-modulating printer or viewer. However, the color of

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the laser illumination, which in this case was blue-green, may preclude operational acceptability of this system as a source of illumination for film viewing. [redacted] informed us that development of gas lasers of the Argon and Krypton variety is proceeding very rapidly and that laboratory models of the Krypton laser produce a total of 5 watts energy in 3 beams corresponding effectively to the primary colors and thereby giving an impression of white light.

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4. The net effect of the [redacted] visit was to convince me that a modulated laser-scanning display system is an operational reality and that its practical application is not far away. However, it is also obvious that there are many problems to be solved before an operationally acceptable device employing this type of illumination can be developed. This fact makes it all the more imperative that we define the requirement for such a device before we invest in the development of techniques for accomplishing it. So my original recommendation, with respect to your suggestion in the reference memorandum, still stands. I do not feel that we should consider supporting any development of the [redacted] laser-scanning technology at this time. However, I certainly recommend that we keep aware of their progress in this field. I believe that our development of the light modulation viewer should proceed from the human factors standpoint to determine the nature and extent of the benefits (if any) and limitations of such a viewing technique.

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[redacted]

Deputy Chief, Development Branch, P&DS

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